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**ANALOG PREAMPLIFIER MEASUREMENT
FOR A MICROPHONE ARRAY**

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ABSTRACT OF THE INVENTION

An analog preamplifier measurement system for a microphone array builds on conventional microphone arrays by providing an integral "self-calibration system." This self-calibration system automatically injects an
15 excitation pulse of a known magnitude and phase to all preamplifier inputs within the microphone array. The resulting analog waveform from each preamplifier output is then measured. A frequency analysis, such as, for example, a Fourier or Fast Fourier Transform (FFT), or other conventional frequency analysis, of each of the resulting waveforms is then performed. The results of this frequency
20 analysis are then used to automatically compute frequency-domain compensation gains (e.g., magnitude and phase gains) for each preamplifier for matching or balancing the responses of all of the preamplifiers with each other.